

Application Serial No.: 10/796,733
Amendment and Response to April 4, 2007 Non-Final Office Action

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REMARKS

Claims 1-13, 15-34 and 36-42 are in the application, with Claims 14 and 35 having been cancelled and Claims 1, 7, 9, 10, 15, 17, 19, 20, 22, 28, 30, 31, 36, 38, 40 and 41 having been amended. Claims 1 and 22 are the independent claims herein. No new matter has been added. Reconsideration and further examination are respectfully requested.

Claims 1-3, 5-10, 14, 15, 17, 18, 22-24, 26-31, 35, 36, 38 and 39 were rejected under 35 U.S.C. §102(b) as allegedly being anticipated by U.S. Patent No. 6,522,712 (Yavuz); Claims 4, 12, 13, 25, 33 and 34 were rejected under 35 U.S.C. §103(a) over Yavuz in view of U.S. Patent No. 6,842,502 (Jaffray); Claims 11, 16, 32 and 37 were rejected under 35 U.S.C. §103(a) over Yavuz in view of U.S. Patent No. 6,522,712 (Ikeda); and Claims 19-21 and 40-42 were rejected under 35 U.S.C. §103(a) over Yavuz and in view of U.S. Patent No. 6,563,941 (O'Donnell). Reconsideration and withdrawal of the rejections are respectfully requested.

Amended independent Claims 1 and 22 each relate to acquisition of a plurality of images of a first portion of a body undergoing substantially periodic motion, determination of a measure of image similarity between at least two of the plurality of images, and determination, based on the measure of image similarity, that the at least two of the plurality of images represent substantially a same phase of the periodic motion.

According to the example illustrated in FIGS. 3 and 4 and described at page 8, lines 9 through 30 of the present specification, measures of similarity are determined between image (Z_1 , T_1) and images (Z_1 , T_2) through (Z_1 , T_{12}). Based on the measures, it is determined that images (Z_1 , T_1), (Z_1 , T_5) and (Z_1 , T_9) represent substantially a same phase of periodic motion. These images may be used in some embodiments to reconstruct an image of the body corresponding to the same phase of periodic motion.

The claimed system may be more efficient than prior systems such as those described in the Background. These prior systems time-stamp projection images during their acquisition and extract subsets of the images. Each image in a subset corresponds to the same phase of periodic motion. The subsets are extracted by comparing the time-stamps of the images with an external temporal physiological or anatomical signal that is measured with an external device.

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Yavuz is seen to describe a system as described in the present Background. More particularly, Yuvaz is not seen to disclose or suggest acquisition of a plurality of images of a first portion of a body undergoing substantially periodic motion, determination of a measure of image similarity between at least two of the plurality of images, and determination, based on the measure of image similarity, that the at least two of the plurality of images represent substantially a same phase of the periodic motion.

Applicants acknowledge that Yavuz describes the association of acquired projection images with various periods of the cardiac cycle. However, as described at least at col. 7, lines 45 through 62 and col. 15, line 22 through col. 16, line 1, Yuvaz correlates acquired data sinograms with simultaneously-collected timing data such as EKG data from EKG unit 160. Accordingly, Yuvaz compares sinogram time-stamps with external timing data of a periodic motion to determine which sinograms correspond to particular phases of the periodic motion. Nowhere does Yuvaz describe determination, based on a measure of image similarity, that at least two images represent substantially a same phase of a periodic motion.

The remaining art of record has been reviewed and is not seen to remedy the deficiencies of Yuvaz. Specifically, the art of record, taken in any permissible combination, is not seen to disclose or to suggest acquisition of a plurality of images of a first portion of a body undergoing substantially periodic motion, determination of a measure of image similarity between at least two of the plurality of images, and determination, based on the measure of image similarity, that the at least two of the plurality of images represent substantially a same phase of the periodic motion. Accordingly, Claims 1, 22 and their respective dependent claims are believed to be allowable for at least the foregoing reasons.

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CONCLUSION

Accordingly, Applicant respectfully requests allowance of the pending claims. If any issues remain, or if the Examiner has any further suggestions for expediting allowance of the present application, the Examiner is kindly invited to contact the undersigned via telephone at (650) 694-5810.

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